**SLEEP DISORDER DETECTION**

Exciting Machine Learning Project: Sleep Disorder Detection using Support Vector Classifier and Random Forest Algorithm

**INTRODUCTION:**

It is necessary to detect sleep disorder within a person because depending on its intensity, sleep disorder can affect a person's ability of function mentally, emotionally and physically. In this project, I built a Sleep Disorder Detection system using the Support Vector Classifier and Random Forest Algorithm

**AIM**: To predict whether a person has any sleep disorder or not.

* Our dataset has 2 types of sleep disorders:

1.Insomnia

2.Sleep Apnea

**TOOLS & TECHNOLOGIES USED:**

- Python, pandas, NumPy

- matplotlib, seaborn

- scikit-learn (sklearn) library for algorithms

- joblib

- Streamlit to create a user-friendly website

**PROJECT OVERFLOW:**

* Loading the data
* Check for missing values
* Check the data type and converting them into int/float
* Exploratory Data Analysis (using seaborn)
* Data preprocessing
* Label Encoding
* Splitting X and y values
* 0versampling
* Using scaler to normalize values
* train\_test\_split
* Applying algorithms and Hyperparameter tuning:

1.KNN

2.SVC

3.Gaussian NB

4.Random Forest Classifier

5.Decision Tree Classifier

6.Gradient Boosting

* Generating Classification report and Confusion Matrix

(In Classification report, Support Vector Classifier and Random Forest model has highest accuracy of 91%.)

* **Further I created pipeline using Support Vector Classifier**
* Load the libraries
* Load the Dataset
* Need of Transformation
* One Hot Encoding
* Column Transformation
* Predicting on new data
* Save the Pipeline
* **Using that pipeline I Created a Streamlit web application**

**Streamlit Web App:**

I developed an interactive web application using Streamlit, allowing users to input their medical information and get an instant prediction on whether they have any sleep disorder or not. The user-friendly interface makes it easy for anyone to utilize the system.

